Demonstrating the Viability of Telemedicine In Correctional Health Care

By Allan Turner, Pete Nacci and Ronald Waldron

Prisons are responsible for providing health care and appropriate medical treatment to persons in their custody. The delivery of health care to inmates is a demanding, costly responsibility for prison systems and often presents a threat to the order and security of a prison facility. Frequently, departments of correction (DOCs) experience difficulties delivering the medical care that is necessary to ensure the continued health maintenance of inmates within a prison itself. Typically, the prison provides primary health care but also must provide secondary and tertiary health care for acutely ill inmates in the community. Therefore, specialized care such as oncology, orthopedics and dermatology, frequently is obtained in the community. Under the U.S. Constitution, DOCs cannot deny access to this type of care. Consequently, the inmate in need of health care that cannot be delivered inside the correctional facility must be transported into the community where they can receive the care they need.

However, transporting the inmate to the community takes the offender outside the institution's envelope of security. Inmates are aware of the escape potential inherent in outside medical trips and some will fake illnesses to exploit the security weakness. This presents a difficult choice for prison officials who must determine if the situation is medically legitimate, an escape plot or some other scheme.

Defining Telemedicine

Telemedicine can be broadly defined as the use of telecommunications technologies to provide medical information and services. A telemedicine network usually consists of a network of remote sites from which patients are presented for treatment via telecommunications to physicians located at a hub site.

Basically, telemedicine involves one physician phoning another to consult on diagnosis or treatment for an individual. More recently, interactive consultations and diagnosis between providers have expanded the use of telemedicine. The first provider views the patient via television while the second provider is at the site with the patient viewing the first provider via television. In effect, the telephone consultation has been upgraded to include real-time interactive visual contact between providers and, in many cases, the patient.

Telemedicine in Prison

Telemedicine has been most useful in situations where physical barriers hinder contact between patients and health care providers. In that context, it has great potential for use in correctional institutions. Although many U.S. prisons maintain quality health care programs, generally only a small number of physicians are on staff and many institutions have only limited access to outside medical specialists. When available, use of specialized medical care requires that inmates be transported outside the secure perimeter of the prison to external medical facilities. Telemedicine allows prison authorities to provide inmates with access to greater numbers of medical specialists while concurrently reducing detainee transport and related security management costs.

Telemedicine Demonstration Project

In 1994, the U.S. Department of Justice (DOJ) and U.S. Department of Defense (DoD), through a Memorandum of Understanding (MOU), established the Joint Program Steering Group (JPSG) to manage technology development and application programs to enhance the effectiveness of the military and law enforcement personnel in fulfilling assigned missions. The National Institute of Justice (NIJ) is the lead agency for the DOJ. As a part of the JPSG's Biomedical Technology Program, a Telemedicine Demonstration Project was undertaken to evaluate telemedicine as a method of providing inmate health services. The three-year project concluded at the end of 1998.

Project Description and Design

The demonstration project was designed to assess the effectiveness of a correctional telemedicine network for improving inmate access to specialty health care, lowering security risks and reducing health care costs. The project also sought to identify the practical issues encountered in the design, implementation and integration of a telemedicine system into an actual prison health care environment, and to derive a cost model and informational guide to help determine the suitability of telemedicine in other applications.

The project installed a telemedicine network to provide remote medical consultation and electronic medical data transfer in federal prisons. Two institutions selected for the demonstration, the U.S. Penitentiary-Lewisburg and the

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U.S. Penitentiary-Allenwood (including inmates from the Federal Correction Institution (FCI-Allenwood), are high security-level facilities located in rural Pennsylvania that incarcerate a large, aging, long-term inmate population requiring access to a wide variety of specialized medical care. Both prisons employed outside consultants to deliver health care services. The third site was the Federal Medical Center (FMC) in Lexington, Ky., an urban, referral medical center for both medium and low security inmates. Both FMC-Lexington and the Veteran's Administration Medical Center in Lexington provided telemedicine consultation services for the demonstration.

Abt Associates, a research firm in Cambridge, Mass., conducted an independent evaluation of the demonstration. Abt Associates staff analyzed data extracted from BOP management information and accounting systems, data collected by telemedicine site coordinators, additional cost data developed by the BOP and by a telemedicine contractor (Tracor Systems Technologies Inc.), and anecdotal data collected by interviews with health services administrators and clinicians involved in the demonstration.

Between August and December 1996, a leased telemedicine suite was installed in each of the participating federal prisons. The first suite became operational during August 1996 at the U.S. Penitentiary in Allenwood, and served inmates at both U.S. Penitentiary-Allenwood and FCI-Allenwood. Subsequent suites served inmates at the U.S. Penitentiary in Lewisburg, Pa. (operational January 1997) and FMC in Lexington, Ky. (operational January 1997). Each of these sites was networked for telemedicine with the Department of Veterans Affairs (VA) Medical Center (operational August 1996) in Lexington, Ky. The VA and Federal Medical Centers in Lexington served as the hubs in this network, providing specialist physicians and other health care practitioners for remote (telemedicine) consultations with inmates in the three Pennsylvania prisons. These telemedicine consultations were conducted from September 1996 through December 1997.

Telemedicine Technology System

The telemedicine demonstration system leased for the project comprised: 1) a PC-based computer workstation with required software; 2) an interactive videoconferencing system with multiple cameras; 3) compatible medical peripheral devices such as an electronic stethoscope and a micro/intraoral camera; and 4) telecommunications equipment. Communications links for the various systems were provided via the Federal Telecommunications System 2000 network.

Demonstration Results

Telemedicine was adopted quickly and was used frequently in several medical specialty areas. The demonstration project showed that the cost benefits of telemedicine will vary depending on the type and nature of the institution's requirements. Telemedicine can play an important role in a quality correctional health care delivery system. The project found telemedicine to be cost-effective, and with continued technological advances, it is forecast required equipment costs would continue to decline, making telemedicine consultations even more cost effective. By the end of the demonstration, 1,321 teleconsultations had been conducted.

Communications can be one of the most bothersome and expensive aspects of telemedicine operations. The telecommunications bandwidth to transmit voice and video data is key to project success and the equipment available will vary significantly from site to site. Bandwidth on demand often is the best technical solution for an operational system and also may be the most economical. This involves paying higher cost rates associated with greater capacity to move large amounts of data on an "as needed" basis.

Well-defined participant roles and missions, agreed to in advance, are an integral part of a telemedicine program. Participant training is needed for program success. Training and continuing education should address the specific needs of all participants.

Physicians reported that telemedicine consultations were effective substitutes for direct, in-person consultations in some specialties such as psychiatry and dermatology, but less successful in others such as cardiology and orthopedics. A nearly complete substitution of telemedicine for in-person psychiatric care took place quickly. Telemedicine consultations also were used routinely for dermatology and orthopedics, although conventional consultations in these specialties continued. Telemedicine consultations were used relatively infrequently with several other types of specialties such as cardiology.

The use of telemedicine eliminated the need for about 13 or 14 transfers by air charter to a FMC. Nearly all of these transfers were for psychiatric reasons. The three Pennsylvania prisons also eliminated about 35 visits to local specialists during the demonstration. Because most trips to local specialists are for care that includes invasive tests and procedures or specialized equipment that cannot be brought into the prison, telemedicine consultations were rarely seen as appropriate substitutes for such trips.

The projected total costs and savings of an operational telemedicine system were estimated using the experience on costs and utilization patterns gained in the demonstration. Data was applied to assumptions about purchase and installation costs of a purchased, rather than leased system (as was used in this demonstration). Based upon these assumptions, it was estimated that the initial cost of equipment could be recovered in approximately 15 months and telemedicine was found to be much less costly than the conventional BOP health care practice.

Telemedicine also improved the quality of care available for offenders. The time between the inmate's referral to a specialist and an actual consultation with the specialist declined in the demonstration prisons. The enhanced communications system also enabled the Pennsylvania prisons to obtain services in at least one specialty not available locally — infectious disease expertise for the care of HIV-positive inmates. Even in fields in which specialists were

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locally available, telemedicine provided access to doctors with more experience in the treatment of inmates.

Prison administrators in the project hypothesized that the prisons were calmer, with fewer incidents of violence because of the improved psychiatric care available through telemedicine. There were fewer assaults at FCI-Allenwood after the demonstration began than in the prior year. However, evaluators were unable to draw any consistent conclusions about the value of telemedicine in improving the social climate of the demonstration prisons.

Conclusions

The project demonstrated convincingly that telemedicine can be established within a prison environment and widely embraced by officials and inmates. Telemedicine was adopted quickly and was used frequently in several medical specialty areas. The demonstration showed that telemedicine consultations were effective substitutes for direct, in-person consultations in some specialties, particularly psychiatry. Telemedicine also improved the quality of care available for offenders, including time between referral and actual consultation, availability of different medical specialists and access to doctors with more experience in the treatment of inmates.

Savings from a program are most likely to result when frequent, individual transfers via air charter are avoided and when in-prison consultations are replaced by telemedicine consultations. Cost savings from trips averted to nearby medical facilities are more modest. It is clear that a correctional agency can add telemedicine to its medical program with the expectation that taxpayer dollars will not be wasted.

As a result of the positive results of the Telemedicine Demonstration Project, JPSG has expanded the project and will demonstrate the viability of telemedicine in jails. In addition, NIJ is testing videoconferencing technology for crime scene investigators and medical examiners as part of its Forensics Program.

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